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REMARKS

Claims 18-20 are pending in this application. This Patent Application is a Divisional Patent Application of U.S. Patent Application Serial No. 10/014,707, filed on November 13, 2001, which was subject to restriction for examination purposes, and Applicants elected to prosecute the inventions of Group I, namely claims 1-16, drawn to methods for making altPSMs, and the claims of Group II were canceled without prejudice or disclaimer of subject matter. The present divisional application is directed to the non-elected invention of Group II, namely claims 17-20, drawn to an altPSM. Accordingly, claims 1-16 have been canceled.

Claim 17 has been canceled, and claims 18-20 have been re-written in independent form. Claims 17-20 stand rejected on prior art grounds.

Reconsideration of the Examiner's prior art rejections is respectfully requested based on the following discussion.

Claims 17-20 stand rejected under 35 U.S.C. §102(e) as being anticipated by Pierrat et al. (US 6,721,938).

Claim 17 has been canceled, rendering this rejection moot.

Claim 18 is directed to an alternating phase shifting mask for projecting an image on an image plane, the mask comprising a layout pattern having at least one element having a layout dimension, said layout dimension corresponding to a target image dimension in the image plane; a phase shape having a phase width, wherein said phase shape is disposed adjacent to said layout dimension, and wherein said phase width is selected in accordance with a relationship between said phase width and said target image dimension wherein said relationship comprises across-chip line width variation (ACLV), and said phase width is selected so that ACLV is minimized. Similarly, claim 19 is directed to an alternating phase shift mask in which the width of the phase shape is selected so that process window is maximized. Claim 20 is directed to an alternating phase shift mask in which the width of the phase shape is selected to be about 0.8-1.2 times the

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layout dimension.

A salient feature of the present invention according to claims 18-20 is that the width of the phase shape on the mask is selected so that a dimensional parameter of the image is optimized. In the case of claim 18, the variation of the errors in printed line widths across the chip is minimized. In the case of claim 19, the range of exposure parameters (i.e. process window) is maximized. In the case of claim 20, the phase widths are selected to be a fraction of the target image dimension, which can be chosen, for example, based on empirical information (for example, see page 13, lines 18-20).

As understood, Pierrat et al. disclose a method of creating a phase shift mask and providing proximity correction by adjusting the position of at least one line segment on the boundary of phase shift windows and by adjusting the position of the complementary trim shape (Abstract). Model based optical proximity correction (OPC) disclosed in Pierrat et al. involves the simulation of the optical effects of a user selected lithography process to a given layout at evaluation points placed within a pattern of a layout. Pierrat et al. discloses the use of a cost function to select when and how to cut the phase shift regions (col. 13, lines 14-25). Pierrat et al. discloses that shifter widths can be adjusted or made wider or narrower (col. 14, lines 42-62). However, Pierrat et al. fails to teach or suggest selecting the phase width based upon minimizing ACLV or maximizing process window or according to a factor of about 0.8-1.2 of the layout dimension (or target image dimension).

Applicants submit that Pierrat et al. fails to disclose all the essential elements of the present invention as recited in claims 18-20. Thus, Applicants submit that claims 18-20 are patentably distinct from the teachings of Pierrat et al., and respectfully request that these rejections be reconsidered and withdrawn.

CONCLUSION

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In view of the foregoing, Applicants submit that claims 18-20, all the claims currently being examined in the application, are patentably distinct from the prior art of record and are in condition for allowance. Should the Examiner find the application to be other than in condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below to discuss any other changes deemed necessary. The Commissioner is authorized to charge any additional fees due or credit overpayments to Deposit Account No. 09-0458.

Applicants' undersigned agent may be reached by telephone at (845) 894-6919. All correspondence should continue to be directed to the address listed below.

Respectfully submitted,



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